SOUTH KING FIRE & RESCUE

www.southkingfire.org

September 29, 2009

To whom it may concern

Smoke alarms alone do not always allow residents to safely exit their homes in the event of a fire. Once the smoke alarm sounds, there is only two to three minutes to get out safely. Firefighters have been on many calls where the homeowner has actually removed the batteries from their smoke alarm or completely removed the device, making it totally inoperative. Historically, 30% of smoke alarms did not operate in homes that had fires; 25% of all fire deaths occurred in homes that had working smoke alarms. Home fire sprinklers are designed to allow residents time to exit their house safely by controlling the fire, and in most cases, to completely extinguish the fire. Unlike smoke alarms, fire sprinkler systems are always on.

When a fire starts in a home it will continue to increase in size depending on the fire-load within the home. The smoke alarm should go off within one to two minutes. Meanwhile, the room temperature reaches around 600°F. From the time the fire starts and the time 9-1-1 is called it could take four to five minutes. It may take another seven to eight minutes before the fire department arrives and another two minutes for them to get their hose lines set up before they can start fighting the fire. By now the fire has been burning for at least ten to fifteen minutes. Somewhere between eight to ten minutes the temperature will have reached over 1200°F and flashover would have occurred, causing the fire to burn out-of-control. This can all be avoided if a fire sprinkler system is installed in the home. The sprinkler system will activate around the same time as the smoke alarm, and in most cases, only one sprinkler head would discharge. One sprinkler head is all that is needed to control the fire, and in most cases extinguish the fire.

Most homes today use lightweight construction techniques which typically fail within five minutes of direct flame contact. This may not affect the homeowner's ability to escape in the event of a fire, but it does affect the safety of the firefighters who are fighting the fire. When the fire is allowed to freely burn, it grows in size, and the heat from the fire starts to decompose the drywall. When the drywall fails, the heat and fire will compromise the integrity of the lightweight construction and weaken and cause the roof or floor to collapse.

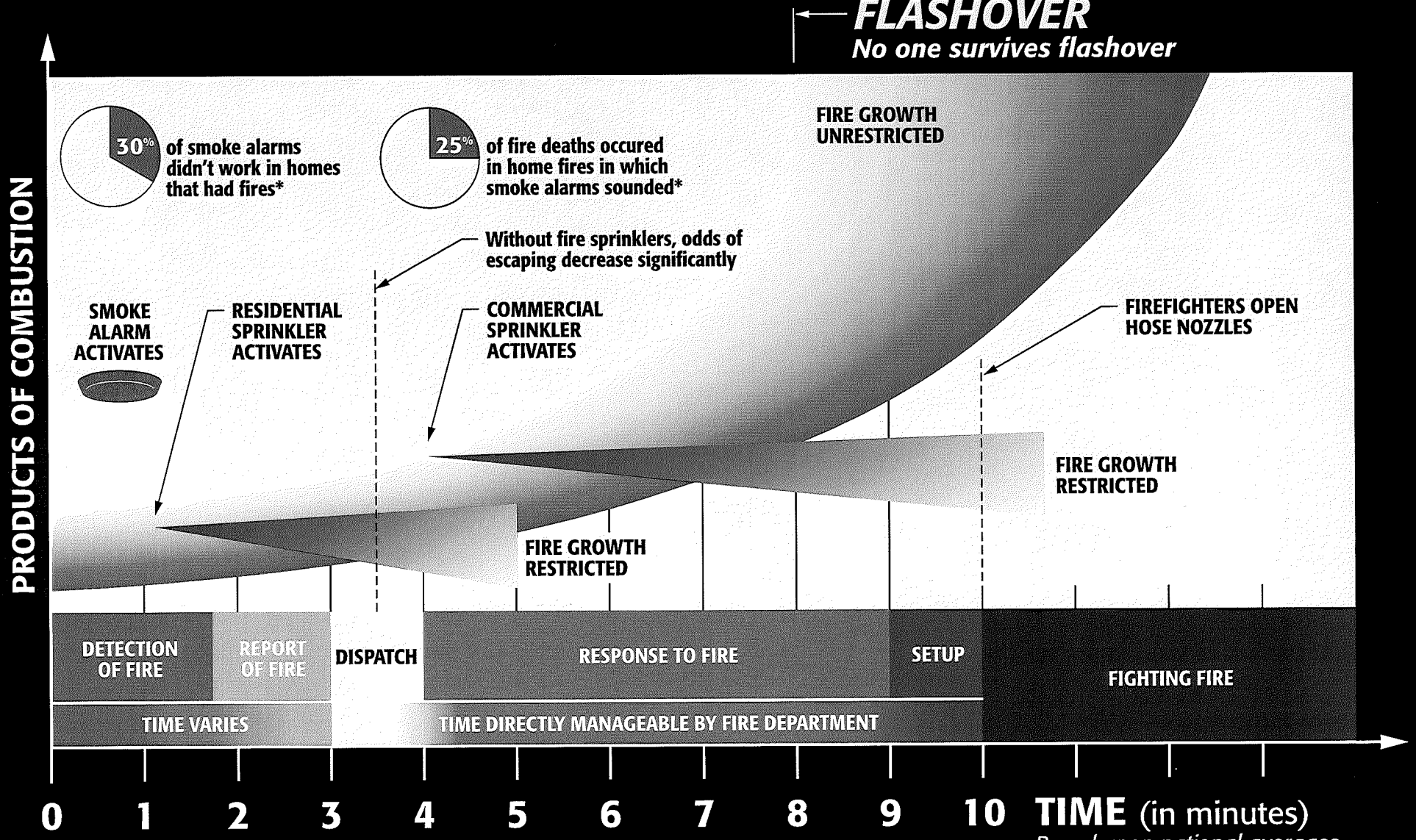
31617 1st AVENUE SOUTH • FEDERAL WAY, WASHINGTON 98003-5201
Seattle: 253/946-7248 fax: 253/529-7206
An Equal Opportunity Employer

Builders claim that with today's codes and fire resistant building materials, homes are more fire safe, but they will still burn primarily due to the fire load in the home. Home furnishings are made up of plastics and other combustible products, increasing the fire load, and fire loading is the reason for fast spreading fires. Fire sprinklers, in addition to smoke alarms, are the answer to saving lives and reducing fire and smoke damage.

Fire Prevention saves lives and property.

Deputy Chief Ron Biesold
Fire Marshal
South King Fire & Rescue
Federal Way and Des Moines

TIME vs. PRODUCTS of COMBUSTION



ACTIONS BEFORE FIRE

1) TEST SMOKE ALARMS
2) CONDUCT FIRE ESCAPE DRILLS

Home Fire Sprinkler COALITION
Protect What You Value Most
www.HomeFireSprinkler.org

*U.S. Experience With Smoke Alarms and Other Fire Alarms. NFPA. September 2001.

NOTE: See NFPA Fire Protection Handbook for time and temperature information.

RESIDENTIAL FIRE SPRINKLERS — THE "MISSING LINK" IN ENVIRONMENTALLY RESPONSIBLE CONSTRUCTION

Residential fires occur daily in the State of Washington (7, 141 residential fires per year in 2008). They pollute our atmosphere with tons of hydrogen cyanide, sulfur dioxide, carbon dioxide, carbon monoxide, hydrogen chloride and nitrogen oxide. They fill our landfills with millions of tons of un-recyclable trash annually. They pollute our streams, rivers, and lakes with contaminated run-off water. In the United States they account for 16,000 injuries and kill almost 3500 people a year. Residential fires waste billions of potable water annually. In the built environment, the best way to eliminate environmental damage from these unwanted fires is to extinguish them when they are small, which is exactly what residential fire sprinkler technology does.

A "Carbon Footprint" is generally defined as "The sum of all emissions of carbon dioxide which were induced by human activity within a given time frame."

Residential fire sprinkler systems reduce our "carbon footprint" in the following ways:

- They reduce the carbon dioxide production from residential fires by more than 80% by early suppression.
- They reduce the carbon footprint of operating fire suppression vehicles.
- They reduce the carbon footprint associated with rebuilding a burned home.
- They reduce the carbon footprint associated with caring for injuries and deaths associated with residential fires.
- They reduce the carbon footprint associated with relocating displaced occupants of a residential fire.

Landfills are another concern resulting from an uncontrolled house fire. Whether a house is completely destroyed in a fire or is only damaged, tons of building materials, furnishings and other ruined possessions are hauled to the dump. According to a green building guidelines report created by the Alameda County Waste Management Authority (San Leandro, Calif.), it's estimated that 21 percent of materials disposed in county landfills are construction and demolition debris. Rebuilding a home will not only require new building materials but also generates tons of construction waste. The report states that total construction waste generated from one 2,000-square-foot new home is nearly 13 tons.

The mission statement of the United States Green Building Council is "To transform the way buildings and communities are designed, built and operated, enabling an environmentally and socially responsible, healthy and prosperous environment that improves the quality of life."

Residential fire sprinklers directly affect several areas measured in green construction including:

- Locations — increased housing density is often allowed by AHJ's for residential sprinklers
- Sustainable sites — fire sprinklers historically increase the life of a building.
- Energy and atmosphere — reduction of toxic airborne emissions from residential fires; reduction of the carbon footprint of unwanted fires.

- Water efficiency — residential fire sprinklers allow reduced required fire flow and consequently smaller water mains. Many AHJ's allow greater hydrant spacing with sprinklered residences. Fire sprinklers react quickly and utilize minimal water. A residential fire sprinkler contains or extinguishes a fire 90% of the time with just one head flowing at 13 gpm for 10 minutes or less, compared with two or three suppression firefighting hoses each flowing a total of more than 250 gpm's for possibly hours. Contaminated run-off from fire-ground efforts to control fires in unsprinklered residences pollutes our streams and lakes.

Next month, the nonprofit Home Fire Sprinkler Coalition (HFSC) is partnering with FM Global, one of the world's largest commercial property insurers, on an unprecedented research project to identify, analyze and evaluate the environmental impact caused by home fires — a topic of increasing international importance.

We know sprinklers provide environmental benefits — benefits we will only be able to prove through scientific study. When sprinklers activate they control the heat, flames and smoke of a home fire, effectively mitigating the products of combustion. The expectation is that a reduction in combustion also results in lessened pollution. It is time to formally determine those qualities as well as the potential for reduced water-related impact. There's never been a better time to do a study like this, because interest is at an all-time high. The results of the research will establish:

- The types, quantity and duration of air and water pollutants released from a home fire as well as the water usage from fire sprinklers and firefighters' hoses.
- The environmental impact resulting from burning household furnishings and finish materials as well as disposing the fire-damaged contents of a home.
- The carbon footprint associated with rebuilding a burnt home.

Residential fire sprinklers are an engineered system to insure a buildings' sustainability, independent of the contents, construction, or actions of its occupants. Residential fire sprinkler systems don't just protect our loved ones; they protect our environment.

It is time to acknowledge the inherent environmentally friendly nature of residential fire sprinklers. The most environmentally responsible thing we can do is to put the fire out while it is still small, with residential fire sprinkler systems.

Tom Raymond

Capt. Tom Raymond
Assistant Fire Marshal
South King Fire & Rescue
253-946-7241

Public Comment for LEED Version 3.

Topic: Fire Protection

Comment:

Development for LEED v3 should include recognition of code required and voluntary fire protection in both the Water Efficiency and the Energy & Atmosphere categories.

Buildings, large and small, with automatic fire sprinkler systems that address an unwanted fire require far less water to hold the fire in check and release fractional amounts of toxins and carbon output at the same time. This translates to shorter fire department operations times leading to less energy usage.

Water Efficiency- Fire sprinklers use far less in measured Gallons Per Minute (GPM) for a few minutes versus two or three 1-3/4" fire attack lines at 125 to 150 GPM each addressing a much larger fire which was allowed to grow and produce more toxic gases and release more Carbon. Now consider as an example; 5 or 6 fire apparatus using 1000 to 2000 GPM each at a six story apartment bldg fire. Water runoff in many large volume fires will also create a concern of erosion of the local surface. Dirt and silt further clogging our natural waterways and harming the living entities in those waterways.

Water Efficiency- Water Mains and other aging pipelines, joints, flanges and shifting ground all contribute to unseen and unmeasured water loss. System operating pressure forces water through existing cracks and fissures in the system out into the surrounding ground. Unseen, unreported leakage continues for years, forcing the system to produce and pump more water than necessary. With more fire sprinkler systems on a distribution system it is possible to reduce the size of the mains at installation or upon repair. Smaller mains will have smaller leaks will be than larger mains required in areas completely reliant on traditional fire suppression forces.

Based of fire flow calculations, water distribution systems can use smaller pipes in areas that are fire sprinklered. As distribution systems age, they are susceptible to breaks. Water main breaks in the middle of the night release tens of thousands of gallons of water depending on the diameter of the pipe at the point of the break. It takes hours to discover the break, report the break, gather up the water purveyor's crew and equipment and turn off the appropriate valves. Smaller fire flow requirements in areas that are fire sprinklered require smaller mains. Smaller pipes will have less loss of water at the time of a break.

Energy & Atmosphere- Tons of toxic gases are released annually due to structure fires. Promotion of a LEED Credit for voluntary fire sprinkler systems will significantly reduce the carbon footprint due to structure fires, particularly in new homes where the U.S. fire problem is the most significant.

Energy & Atmosphere- Contaminated water released from structure fires sometimes in the millions of gallons at one incident now full of toxic substances running into the ground or storm sewers and then onto our rivers, lakes, oceans.

Energy & Atmosphere- Fire pumpers, ladder trucks, heavy rescue units, and ambulances waste thousands of gallons of diesel fuel annually, not only for responding and returning to incidents, but at large incidents that require multiple pieces of equipment with a couple hours to a couple days of high idle while in operation at a fire scene that did not have the benefit of automatic fire sprinklers.

Fire apparatus operating at fire incidents of less duration will also extend their life span not requiring replacement or overhaul as quick as those that are required to address stressful incidents of many hours.

Energy & Atmosphere- Burnt building materials will end up in the landfill as most material will be beyond recycling or reuse capabilities. Not just the burnt material is discarded from a structure involved in a fire. The peripheral materials will also need replacement either by code or design of the new part of the structure or by insurance and liability driven issues for the contractor in order to guarantee his work.

For example, if a roof is damaged by the fire and firefighting operations, the roofer is not just going to patch a hole. The roofer is going to replace a significant area or the entire roof to insure his work. In many cases involving a single- or two-family home, the whole roof of a home may be replaced. Many times exposed neighboring structures have radiant heat damage and will also produce tons of discarded building materials to our landfills.

Energy & Atmosphere- Fire deaths and injuries require tons of materials annually used in emergency medicine and care of burn patients. These materials are considered bio hazards and need to be disposed of accordingly as hazardous materials. Tons of materials could be saved if we did not have to treat over 3,400 fire victims that die and tens of thousands of fire victims that survive EACH year. The energy used to manufacture and then later incinerate would be significantly reduced through the wider use and acceptance of automatic fire sprinklers in all new commercial and residential construction.

Burn survivors need a lifetime of care against infection and disease. Each burn survivor will require tons of materials in their perpetual care and will use countless units of Energy for their surgeries and care.

Fire sprinklers have been inherently providing environmental protection without a lot of "credit" for over 130 years.